

Course content for International Master program „Mathematical modeling, computation and optimization“

Course name	Randomized Algorithms and Online Optimization
Contents and Objectives	<p><u>Content:</u></p> <ul style="list-style-type: none"> • randomized algorithms • probabilistic analysis • online algorithms and competitiveness • approximation algorithms <p><u>Objectives of the course:</u> Within the realm of combinatorial or more generally discrete optimization problems it should enable to employ techniques for improving the performance of algorithms by randomization, to analyze algorithms with randomized inputs or subroutines regarding correctness and efficiency, to deal with input that is revealed over time and to design and analyze the efficiency of algorithms producing solutions with quality guarantee.</p>
Teaching	This course consists of lectures (2h/week)
Prerequisites	Basic notions of Analysis, Linear Algebra, Probability Theory, Discrete Mathematics and Optimization.
Examination	Oral exam (30 minutes)
Credits	4 ECTS points
Frequency	This course is given at least once in four years.
Workload	The estimated total working time for this course is 120 hours.
Duration	This course is given during one semester.